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EXAMINER	
PENG, CHARLIE YU	

ART UNIT	PAPER NUMBER
2883	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/528,319	FRANKLIN ET AL.	
	Examiner	Art Unit	
	Charlie Peng	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-13,15,16,18 and 21-41* is/are rejected.

7)☒ Claim(s) *7,8,14,17,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05/23/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Brian Healy
Primary Examiner

DETAILED ACTION

Claim Objections

1. Claim 33 is objected to because of the following informalities: all claims should end with a period. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-6, 9, 16, 21-23, 33 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,117,472 to Blyler Jr. et al. Blyler teaches an optical source 101 coupled to an optical mixing core 102 surrounded by a cladding structure/sheath 103, the optical mixing core a small concentration of refractive particles added therein, and wherein the particles are closely matched to the index of refraction of the optical mixing core 102 resulting in smaller deflection angles and lower intensity reflections. (Column 2, lines 3-63) Since the particles act to refract light rays striking upon them as shown in Fig. 2, they are inherently transparent.

With specific reference to claim 4, Blyler teaches a second embodiment (column 5, lines 40-65) wherein microparticles (n = 1.473) are suspended in the optical mixing core (n = 1.466). The optical cladding is made of material having a refractive index of 1.33, (column 4, paragraph 1) or Teflon FEP (n = 1.345).

With specific reference to claims 5 and 6, the value $\mu = \frac{1.477}{1.463} - 1 = 0.0096$, and Blyler did not teach the materials used to make the microparticles or the core having variations of refractive index over different wavelength, μ therefore has low or no variation.

With specific reference to claim 16, the optical source 101 is advantageously an optical laser and there could be a plurality of optical sources utilized. (column 2, lines 60-63)

With specific reference to claim 21 and 22, Blyler teaches an embodiment illustrated in Fig. 4 wherein each of the plurality of optical sources 405, 406 is coupled to an optical fiber 401 and subsequently the mixing core.

With specific reference to claim 23, the optical cladding surrounding the mixing core has a lower refractive index than that of the core and act to prevent light from escaping through TIR (total internal reflection).

With specific reference to claims 33 and 38, Blyler teaches that the optical core is made by adding spherical microparticles to a suspension material. (Fig. 2 and Abstract)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blyler Jr. et al. in view of U.S. Patent 4,466,697 to Daniel. Blyer discloses the claimed invention except for a concentration of the diffuser particles in the care and a length of the light guide being varied. Daniel teaches a light dispersive optical fiber having a core 22, a cladding 24 and scattering particles 40. In a variation of Daniel's invention, the optical fibers manufactured is doped to scatter light in some region 70 but not in other regions 72. (See Fig. 5 and description.) Since the Blyler Jr. reference and the Daniel reference are from the same field of endeavor in using light scattering particles in optical fibers, the purpose of using would have been recognized in the pertinent art of Blyler's invention. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of Blyler's invention by having only portions of the optical fiber length to encapsulate scattering particles in some portions of the optical fiber. The motivation would be to have the optical fibers affixed to a transmission source in the shortest possible distance to avoid wasted light emission. It is noted functional languages within apparatus claims have not been given patentable weight since the apparatus claims must be structurally distinguishable from the prior art. (See MPEP 2114)

4. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blyler Jr. et al. Blyer discloses the claimed invention except for ranges of numbers for the microparticles. Blyler teaches, in both the first and the second embodiment, that the microparticles are of a certain percentage by weight and have a dimension of up to 100 or 105 microns. These teachings suggest that as the size (and consequently weight) of

the microparticles varies, so will the overall number of the microparticles since the overall weight percentage is constant. Furthermore, it is immediately obvious to those skilled in the art that more microparticles would result in more reflection loss in the optical coupler and number of microparticles is a result-effective variable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine or optimize the number of microparticles, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in he art. (See MPEP 2144.05) The motivation would be to reduce optical loss yet still allow coupling of modes as Blyler's invention intends.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blyler Jr. et al. The microparticles used by Blyler has range of 5 – 500 microns, which is substantially large than a range of laser transmitters such as a VCSEL having typical wavelength of 850nm – 1550nm. It would have been obvious to one of ordinary skill in the art to use a typical laser as it produces a coherent and monochromatic light signal advantageous for optical communication applications.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blyler Jr. et al. Blyler teaches that there could be a plurality of optical sources utilized but not an LED array as the optical sources. LED is a commonly used light source in optical devices and it would have been obvious to one of ordinary skill in the art to use a typical laser as it has the advantage of longer life and narrow spectrum light.

7. Claims 24-32, 34-37 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blyler Jr. et al. Blyler teaches all the structural limitations of the invention including a light guide with particles distributed therein except for particular materials used as part of the light guide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select any of the materials capable of light transmission function, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of necessary choice. In re Leshin, 125 USPQ 416. The motivation would be to use a light transmission materials that is readily available, cheaper, has better durability, etc.

Allowable Subject Matter

8. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Blyler teaches the claimed invention except for a particular value of μ at a wavelength of 589nm. No relevant prior art teach or suggest these particular values. It is the examiner's opinion that the prior art of record, taken alone or in combination, fails to disclose or render obvious these values, in combination with the rest of the limitations of the base claim.

Claim 14 is also objected to but would be allowable as a dependent claim of claim 8.

9. Claims 17, 19, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims. Blyler teaches the claimed invention except for light sources of different wavelength/color or control means for controlling such light sources. As Blyler's invention is drawn to an optical mode-mixing coupler, one skilled in the art would not have any motivation to use optical sources of different wavelength/color. It is the examiner's opinion that the prior art of record, taken alone or in combination, fails to disclose or render obvious these values, in combination with the rest of the limitations of the base claim.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patents 4,466,697 to Daniel and 4,733,929 to Brown, on fiber waveguides with scattering particles distributed within cores of the waveguides.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charlie Peng whose telephone number is (571) 272-2177. The examiner can normally be reached on 9 am - 6 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cyp

Brian Healy
Primary Examiner